CHRYSLER CORP.

DESCRIPTION

Main alternator components are two end housings, stator, rotor and rectifiers. Housings are vented at both ends and around the circumference. Rotor consists of a field coil encased between two six-fingered overlapping sections which are the pole pieces and produces a 12 pole magnetic field. Ends of field coil are connected to slip rings and battery is connected to field windings through brushes and slip rings. Rotor shaft is supported at drive end by ball bearings and at opposite end by a roller bearing. Both bearings are pre-lubricated. Three silicone diode rectifiers having negative polarity are pressed into end housing and three similar diodes having positive polarity are pressed into a die-cast aluminum sink. Alternator output is controlled by a voltage regulator.

SPECIFICATIONS

Performance Data

Alternator No.	①Amperes
2098265	32.5
2098320	39.0
2098830	34.0
2098835	26.0
2098840	32.5
2098840②	39.0
2098850	44.0
2098875	32.5
2098880	36.0
2444347	34.5
2444599	44.0
2444898	51.0
2642121	51.0
2642537	34.5
2642538	26.0
2642680	51.0
2642709	34.5
2642852	44.0
2875724	44.0
2875844	51.0
3000010	51.0

① – Checked at 15 volts and engine RPM at 1250. Specifications are ±3 amperes.

② – Alternator number without pulley is 2098535.

Rotation – Clockwise at drive end.

Field Coil Draw – 2.38-2.75 amperes at 12.0 volts with alternator rotor turned by hand.

Capacitor Capacity – .50 microfarad ±20%.

TROUBLE SHOOTING

ALTERNATOR DOES NOT CHARGE

Blown fusible wire in regulator. Drive belt loose. Brushes or slip rings worn. Brushes sticking. Field or charging circuits open. Stator windings open. Rectifiers open.

LOW OUTPUT OR LOW BATTERY

High resistance in charging circuit. Regulator setting too low. Rectifier shorted or open. Stator winding grounded.

LOW OR UNSTEADY CHARGING RATE

Drive belt loose. High resistance in charging circuit, battery terminals or engine-to-body ground strap. Stator windings open.

EXCESSIVE CHARGING RATE

Regulator setting too high or contacts stuck. Regulator base not grounded. Regulator windings open. Rectifier open.

REGULATOR CONTACTS OXIDIZED

Regulator setting too high or rotor field coil winding shorted.

REGULATOR CONTACT POINTS STUCK

Poor ground connection between alternator and regulator. Open resistor element.

ALTERNATOR NOISY

Alternator mountings loose. Bearings worn. Drive belt worn. Interference between rotor fan and stator leads or rectifiers. Rotor or rotor fan damaged. Rectifier open or shorted. Stator winding open or shorted.

TESTING (ON CAR)

NOTE – Following tests are without use of special equipment. If special test equipment used, follow directions furnished by tester manufacturer. Make all tests with battery fully charged and engine at normal operating temperature.

FIELD CIRCUIT RESISTANCE

1) Disconnect ignition wire at coil side of ballast resistor, connect positive lead of voltmeter to battery positive post and voltmeter negative lead to voltage regulator "FLD" terminal. Turn ignition switch to "ON" position and voltmeter selector switch to low voltage scale. Voltage should not exceed .55 volt. If reading is greater, high field circuit resistance between battery and regulator field terminal is indicated.

2) If resistance is high, move negative voltmeter lead to each connection along circuit towards battery. A sudden voltage drop indicates loose or corroded terminal or connection between that point and last point tested. *NOTE – Excessive regulator wiring circuit resistance will cause fluctuation in ammeter.*

CHARGING CIRCUIT RESISTANCE

NOTE – Before making test connections, disconnect battery ground cable at battery negative post to avoid accidental shorting of charging or field circuits.

1) Disconnect lead at alternator "BAT" terminal and connect a 0-50 ampere scale D.C. ammeter in series between "BAT" terminal and battery lead (see illustration). Connect positive lead of voltmeter to battery lead and negative voltmeter lead to battery positive terminal. Disconnect field lead at alternator "FLD" terminal and ignition lead at regulator "IGN" terminal, then connect jumper wire between alternator "FLD" terminal and alternator "BAT" terminal. Reconnect battery ground at battery.

2) Connect a variable carbon pile to battery terminals, then start and operate engine at a speed to obtain 10 amperes flowing in circuit. Voltmeter reading should not exceed .3 volts. If a higher voltage drop is indicated, inspect, clean and tighten all connections in charging circuit. *NOTE – If necessary, test voltage drop at each connection to locate connection with excessive resistance.* Before disconnecting test equipment, disconnect battery ground cable.

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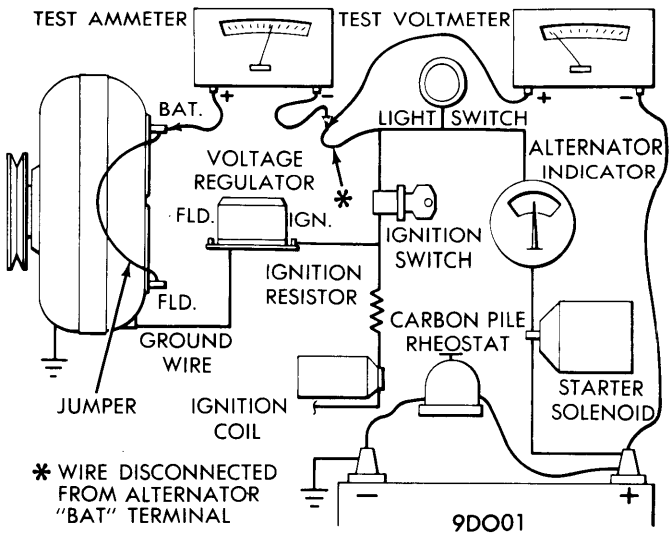
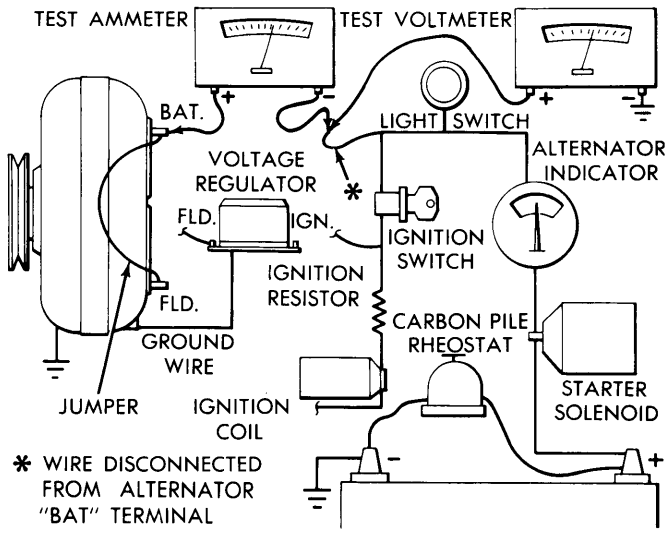


CHARGING CIRCUIT RESISTANCE TEST

CURRENT OUTPUT

1) With test connections made as for Charging Circuit Resistance, disconnect voltmeter negative lead from positive terminal of battery and reconnect to ground (see illustration). Connect a tachometer to engine. Start engine and operate at 1250 RPM. Adjust carbon pile to obtain a reading of 15 volts on test voltmeter and note reading on ammeter. Current output should be within specifications.

2) If output is slightly less (5-7 amperes) than specified, it may be an indication of possible open rectifier or other alternator internal problem. If output is considerably lower, it may be an indication of a possible shorted rectifier or other alternator internal problem.



CURRENT OUTPUT TEST

TESTING (ON BENCH)

FIELD COIL DRAW

Connect positive lead of test ammeter to positive terminal of fully charged battery. Connect a jumper wire to negative terminal of battery, and ground it to alternator end shield. Connect test ammeter negative lead to field terminal of alternator. Slowly rotate alternator rotor by hand and note ammeter reading. Coil draw should be 2.3 amps to 2.7 amps at 12 volts. *NOTE — A low coil draw is an indication of high resistance in field coil circuit (brushes, slip rings, or rotor coil). A higher rotor coil draw indicates a possible shorted coil or a grounded rotor.*

INTERNAL FIELD CIRCUIT (TESTING FOR GROUND)

1) Remove ground brush, touch one test prod from a 110 volt test lamp to alternator insulated brush terminal and remaining test prod to end shield. If rotor assembly or insulated brush is not grounded, lamp will fail to light up.

2) If lamp lights, remove insulated brush assembly and separate end shields by removing through bolts. Again test by placing one of the test prods to a slip ring and other prod to end shield. If lamp lights, rotor assembly is grounded and requires replacement. If lamp does not light after removing insulated brush and separating end shields, cause of ground at first ground test was grounded insulated brush.

3) Install insulated brush holder, terminal, insulated washer, shake proof washer and screw. If parts were not assembled in this order or if wrong screw was used, this could cause the grounded condition.

RECTIFIER (DIODE) TEST

NOTE — Rectifiers may be tested with a test lamp or with tester C-3829 as follows:

Test Lamp Method — Disassemble alternator and separate wires at "Y" connector of stator. Use a test lamp with a No. 67 (4 cp) bulb and a 12 volt battery. Test each rectifier in turn as follows: Touch outer case of rectifier with one probe and wire in center of rectifier with other probe. Reverse the probes, moving probe from outer case to rectifier wire and probe at rectifier wire to outer case. If lamp lights in one direction, rectifier is good. If lamp does not light in either direction, rectifier is open. If lamp lights in both directions, rectifier is shorted.

Tester C-3829 Method — Remove alternator brushes and through bolts. Separate rectifier end housing and stator from drive end housing and rotor, then proceed as follows:

1) To test positive rectifiers, position stator assembly on an insulated surface and connect test lead clip to alternator "BAT" terminal and plug tool into 110 volt A.C. power supply. Touch probe to bare wire connection of each rectifier. *CAUTION — Do not break sealing around rectifier lead wire or on inner end of rectifier as this will accelerate corrosion.*

2) To test negative rectifiers, connect test tool lead clip to rectifier end housing and touch bare wire connection of each rectifier with probe.

3) Good rectifiers will produce a reading of 1¾ amperes or more and will be approximately same for the three rectifiers tested. If two rectifiers are good and one is shorted, reading on good rectifiers will be low and shorted rectifier will read zero. With bad rectifier disconnected, reading on other two rectifiers will be good. If one rectifier is open, its reading will be approximately one ampere and other two rectifiers will show a good reading. Positive and negative rectifiers will read on opposite side of scale.

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STATOR TEST

CAUTION — Unsolder rectifier leads from stator leads before making the following test.

Test stator for grounds with a 110 volt test lamp. Insulate stator from rectifier shield. With one probe of test lamp on stator pole frame, touch each of stator leads with other probe. If lamp lights, stator windings are grounded. To test windings for continuity, touch one lamp probe to all three stator leads at "Y" connection and other probe to each of the three stator leads (disconnected from rectifiers). If lamp does not light at each of three rectifier leads, stator winding is open.

OVERHAUL

DISASSEMBLY

1) Remove insulated brush holder retaining screw, flat washer, nylon washer and field terminal, then carefully lift plastic brush holder (with spring and brush assembly) from end housing. Remove retaining screw from ground brush holder, lift clip, spring and brush assembly from end housing. *CAUTION — Stator is laminated, do not burr stator or end shield.* Remove through bolts and pry between stator and drive end shield with blade of a screwdriver. Carefully separate drive end shield pulley and rotor assembly from stator and rectifier shield assembly.

2) If necessary to remove rectifiers, unsolder rectifier wire from stator lead at point of crimp. Place suitable removing and installing press in a vise and support end shield on clamp anvil under rectifier to be removed. Suitable support adaptor (C-3771 or SP-3821) is cut away and slotted to fit over wires and around bosses in end shield. *CAUTION — Bore of tool must be completely surround rectifier during removal process.* Carefully apply pressure with tool pressure screw until support tool, rectifier end shield, remover pin and adapter are aligned, then press rectifier out of end shield or heat sink.

3) Remove output terminal nuts, washers and remove terminal screw and inside capacitor. Terminal screw also holds heat sink in place. Remove insulator. If necessary to remove rectifier end frame needle bearing, protect end shield by supporting with suitable tool (C-3925). Press bearing out using suitable tool (C-3770A). *CAUTION — Notches in tool must clear raised section of heat sink.*

4) Remove pulley using suitable tool (C-4068) and pry drive end bearing spring retainer from shield with a screwdriver. Support end shield and tap out rotor shaft with a plastic hammer. Drive end bearing can be removed with suitable puller (C-3615) and adapters. *CAUTION — Lower end of adapters must be equally spaced under bearing and tool sleeve bottomed on bearing.*

SLIP RING REPLACEMENT (1965-66)

1) Cut through rotor grease retainer with a chisel and remove retainer, then unsolder field coil leads at solder lugs. Cut through copper of both slip rings at points 180° apart using a chisel, then break insulator and remove rings. Clean ends of field coil lead wires. Tin one end of an 18 gauge wire (3" long) to be used as a guide wire. Lap tinned end of guide wire over coil lead-to-insulated ring and solder the two wires together.

2) Position new slip ring over guide wire and rotor shaft so wire will lay in slip ring groove. *NOTE — Groove in slip ring must be in line with insulated brush field lead to provide room for the lead without damaging it.* Position suitable installing tool (C-3900) over rotor shaft with guide wire protruding from slot in tool. Position rotor, slip ring and tool assembly in an arbor press, then pull on guide wire to guide insulated field lead into slip ring groove. While guiding field lead through the groove, press slip ring on shaft. When slip ring is bottomed on rotor fan, end of field lead should be visible at solder lug.

3) Unsolder guide wire from slip ring lead, then press field lead into solder lug and use rosin core solder to secure. *CAUTION — Solder bead must not extend beyond surface of plastic material.* Coil the ground brush ring field lead around solder lug and secure with rosin core solder.

4) Test slip rings for ground using a 110 volt test lamp by touching one probe to rotor pole shoe and other probe to slip rings. Test lamp should not light. If lamp lights, slip rings are grounded. *NOTE — Possible cause of grounding may be due to grounding insulated field lead when installing slip ring.* If rotor is not grounded, lightly clean slip ring surfaces with "00" sandpaper and assemble alternator. Install new insulator and grease shield using suitable tool (C-3921).

SLIP RING REPLACEMENT (1967-70)

1) Remove rotor plastic grease retainer and carefully unwind field coil leads from slip ring lugs. *CAUTION — Do not break wire leads.* Chisel through copper of both slip rings at points 180° apart. Break plastic insulator and remove old slip rings. Scrape ends of field coil wires (for good electrical contact) and position wires to clear path for new slip ring.

2) Position new slip ring on rotor shaft with lugs in proper position for connecting field coil wires. Position suitable tool (C-3900) over rotor shaft and position rotor, slip ring and tool assembly in arbor press. Press ring on shaft. *CAUTION — When slip ring bottoms on rotor fan, field lead wire should clear access hole, fan and pole piece.*

3) Tin field coil lead wires. Coil each field lead wire around slip ring lug and solder with resin core solder. Test for continuity and ground using a 110 volt test lamp as follows: With one test lamp probe on slip ring and other test lamp probe on rotor pole piece, lamp should not light. With one test lamp probe on each slip ring, lamp should light.

4) Press grease retainer on rotor shaft using suitable tool (C-3921). Retainer will be properly positioned when tool bottoms on rotor shaft.

REASSEMBLY

NOTE — Insure correct rectifier is installed. Identifying part numbers are stamped on rectifier case and rectifiers are color coded; red for positive and black for negative.

1) Support heat sink or rectifier end shield on adapter, then carefully apply pressure with screw until installer tool, rectifier and shield or heat sink are aligned. With rectifier started squarely in casting, slowly apply pressure with tool screw until rectifier collar bottoms against casting. *NOTE — Installer support adapter should fit squarely around inner boss of rectifier and pressure must be applied to outer rim of rectifier. Do not use hammer to start rectifier in its bore. Rough handling will damage silicon wafer within rectifier.*

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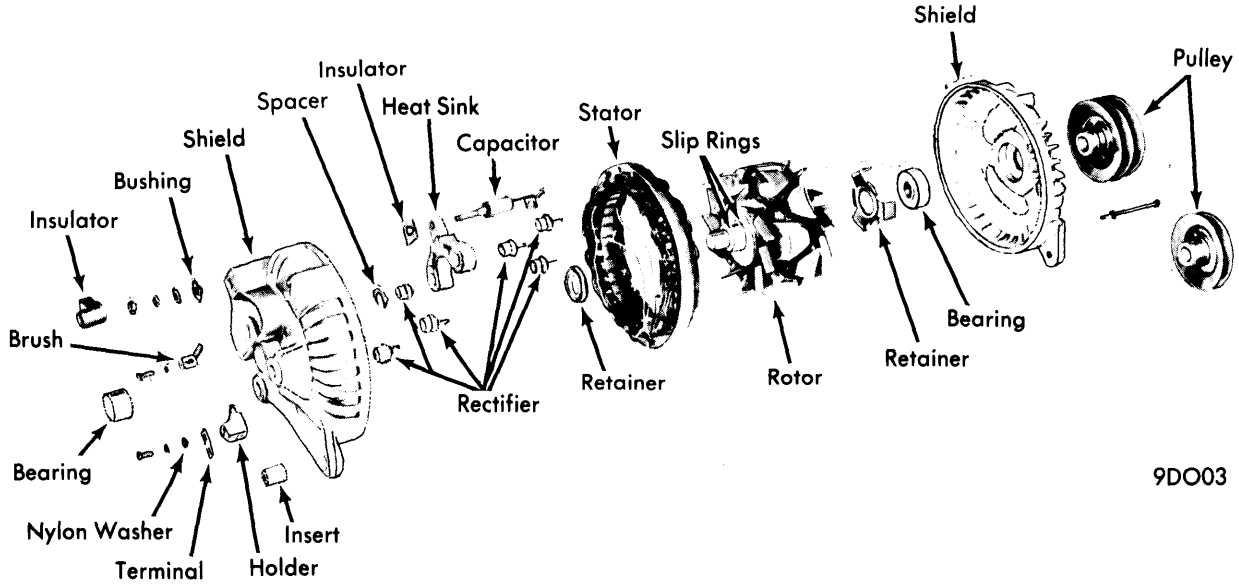
2) If stator leads were disconnected, clean leads and bend rectifier wire loop snugly around stator lead and solder with resin core solder. *NOTE — Hold rectifier lead wire with pliers just below joint while soldering. Pliers will absorb heat from soldering and will protect rectifier.* After soldering, push stator leads into slots cast in end shield and cement in position with MoPart cement, Part No. 2299314, or equivalent (to prevent interference with rotor fan). Test each replacement rectifier to insure it was not damaged by soldering or pressing operations.

3) Support end shield on suitable tool (C-3925) with notch in support tool clearing raised section of heat sink. Press bearing into position using suitable tool (SP-3381). *NOTE — New bearings are pre-lubricated and additional lubrication is not required.* Insert drive end bearing in shield and install bearing retainer plate. Position bearing and shield on rotor shaft and, while supporting rotor shaft base, press bearing and shield into position. *NOTE — Bearing must be installed squarely and pressed on shaft until it contacts shoulder on shaft.*

4) Install pulley on rotor shaft, supporting rotor so all pressing force is on pulley hub and rotor shaft, then press into position with an arbor press. *CAUTION — Do not use force greater than 6,800 lbs.* Pulley should just contact bearing inner race. Make sure heat sink is in place (alternator capacitor is mounted internally), then install capacitor stud through heat sink and end shield. Install insulating washer, lockwashers and lock nuts, then make sure heat sink and insulator are in position and tighten lock nut.

5) Position stator on rectifier end shield, then position rotor end shield assembly on stator and rectifier end shield. Align through bolt holes in stator, rectifier end shield and drive end shield, then compress stator and both end shields by hand and install through bolts, washers and nuts. Install insulated brush in rectifier end and place bronze terminal on plastic holder with tab of terminal in recess in plastic holder. Place nylon washer on bronze terminal and install lockwasher, attaching screws, ground brush and screw. Rotate pulley slowly by hand to insure rotor fans do not hit rectifiers, capacitor lead, and stator connections.



CHRYSLER CORP. ALTERNATOR ASSEMBLY (TYPICAL)

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